

It Takes a Village

SHARING MEASLES

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# SIGNS AND SYMPTOMS

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- Prodrome
  - Fever ( $>101^{\circ}\text{F}$ , may be as high as  $105^{\circ}\text{F}$ )
  - The “3 C’s”
    - Cough
    - Coryza (Runny Nose)
    - Conjunctivitis
  - Pathognomonic enanthema (Koplik spots)
- Maculopapular rash
  - Spreads from head to trunk to lower extremities

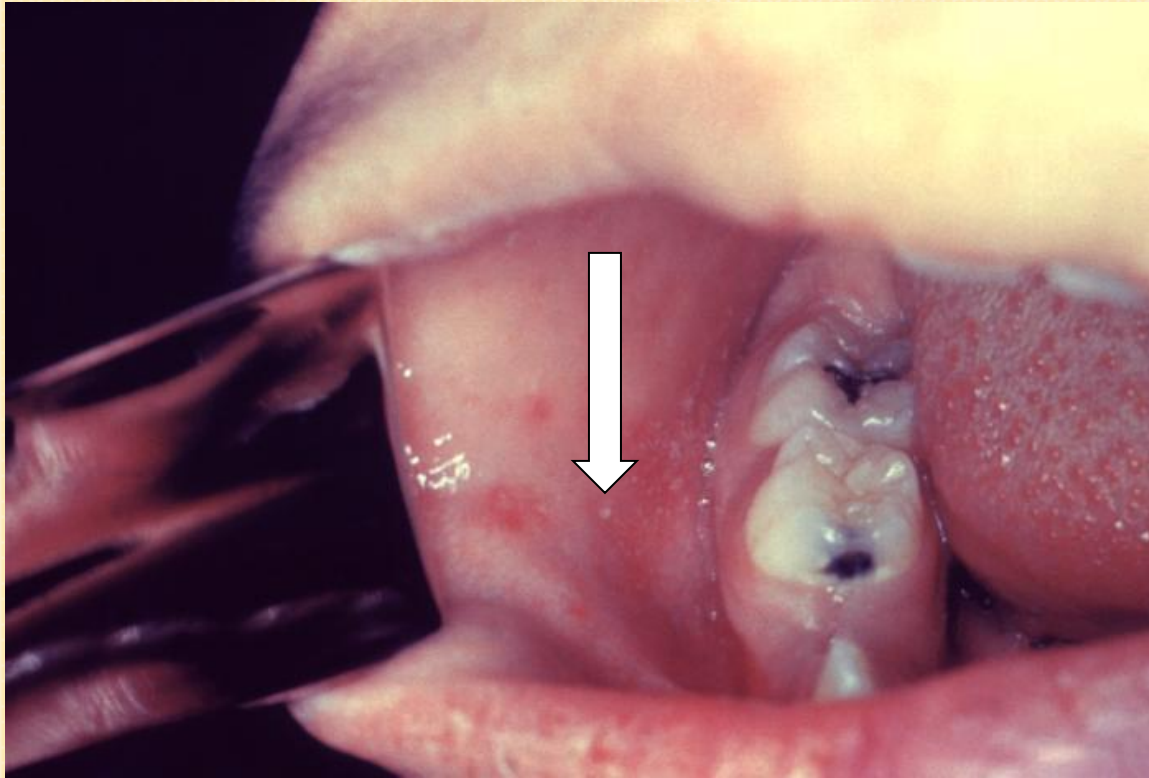
# A CLOSER LOOK - CONJUNCTIVITIS



Unless otherwise noted,  
all photos courtesy CDC.



# A CLOSER LOOK – KOPLIK SPOTS



# A CLOSER LOOK – THE RASH



Measles rash generally begins on the head and moves downward. It is usually red to red-brown in color and becomes confluent. It is not vesicular.

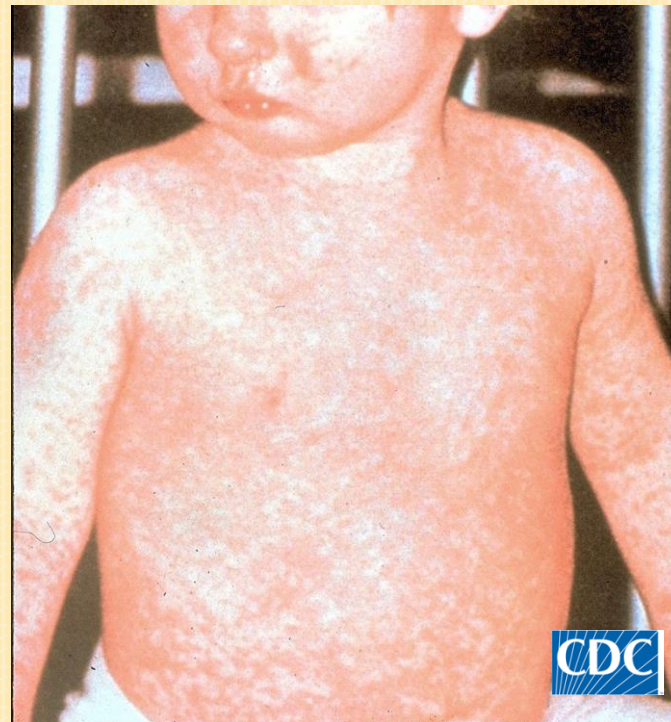


# RUBELLA VS. MEASLES



Rubella tends to remain pink and is less likely to become confluent, while measles frequently becomes confluent and goes from red to red-brown.

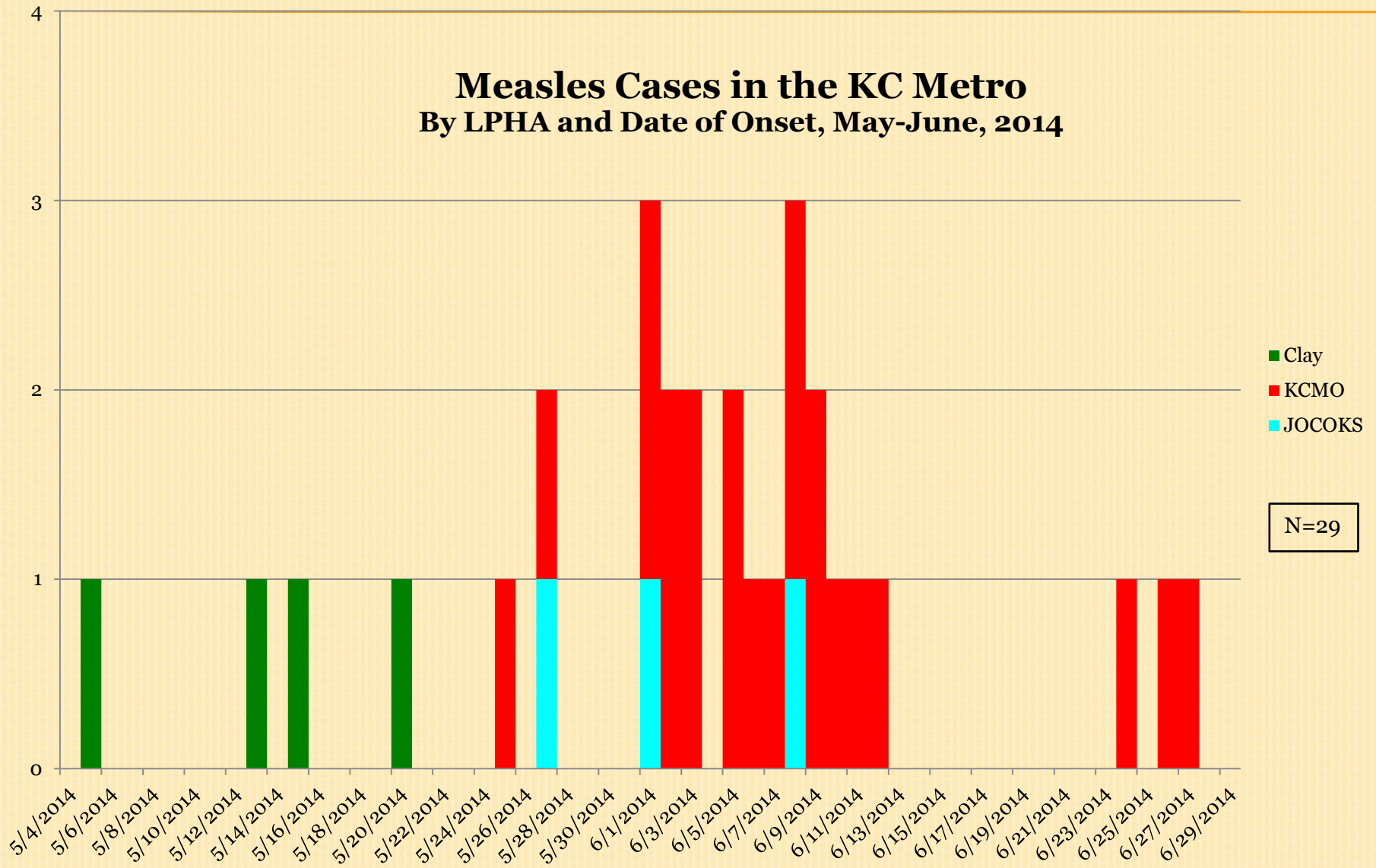
# CHICKENPOX VS. MEASLES



Chickenpox lesions are generally more discreet and are vesicular, occurring in crops. Lesions generally crust in 2-3 days after eruption.

# THE OUTBREAK - HISTOGRAM

**Measles Cases in the KC Metro**  
**By LPHA and Date of Onset, May-June, 2014**





# THE OUTBREAK - DEMOGRAPHICS

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- 16 Females and 13 Males
- Age Range: 2 Weeks – 43 Years
  - Median Age: 21.5 Years
  - Average Age: 17.9 Years
- Demographic Factors
  - Micronesian
  - Vaccine history limited, lacking documentation
  - Children not vaccinated until school entry
  - Large, multigenerational households
  - Close, active social network

# MEASLES OUTBREAK IMPACT (KCMO)

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- 22 confirmed cases and 8 suspect cases
- 62 direct contacts
- 8 impacted places of employment
- 7 impacted social gathering groups

# THE INDEX CASE

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- 4 month old Micronesian infant
- Presented to Urgent Care 5-6-14
- 1 day hx. fever, cough, runny nose
- Discharged with “likely viral illness”
  
- Presented to ED 5-7-14

# THE INDEX CASE

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- Same symptoms with rash starting on face day before, spreading to trunk/extremities
- Additionally had eye drainage
- No sick contacts
- Arrived from Micronesia 19 days prior
- ID physician consulted
- Measles antibody sent

# PUBLIC HEALTH RESPONSE

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- First case (4 month old) – Clay County Health Department (CCHD) visited home to check for other cases and told residents to self-quarantine.
  - Household members (9) were vaccinated with MMR due to timing of exposure and availability of IG.
  - CCHD made arrangements for food and other deliveries so that family could stay in the home.
  - Kansas City Health Department (KCMOHD) contacted employer of case's father to assure he remained off work, but would have a job to come back to.
  - Despite instructions to the contrary, several people from the community visited the home.



# PUBLIC HEALTH RESPONSE

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- Second and third cases – Onset about a week after initial case.
  - CCHD reinforced the quarantine and worked to get the child seen and diagnosed.
  - They were likely exposed to the same source as the original case.
- Fourth case – Father onset one day before he was to return to work.
  - He was likely infected by a household case.

# PUBLIC HEALTH RESPONSE

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- Subsequent households – Initial cases in each household (both in Kansas and Missouri) were likely exposed in a social setting to members of the initial household.
  - All subsequent contacts in Missouri were prophylaxed with IG and quarantined to their homes.
  - Several clinics were held to boost community vaccination rates.
  - KCMOHD personnel visited each household at least daily to check for newly symptomatic cases and reinforce the quarantine.
    - Despite quarantine, family members from Southwest Missouri, Kansas and Texas visited households with a known case.
      - Local Public Health efforts were able to identify the contacts from Southwest Missouri and provide prophylaxis. No secondary cases were reported.
      - The visitor from Texas onset with disease and was the index case for a cluster down there.
      - A visitor in Eastern Kansas was infected and returned to South Central Kansas, resulting in a cluster there.

# KCHD RESPONSE

## MEDICAL COUNTERMEASURES

- ✘ 125 vaccinations
  - + In-home
  - + Church
  - + 3 places of employment
  - + Neighborhood park
- ✘ IG administered to 25 people
- ✘ 54 blood titer samples

## NON-PHARMACEUTICAL INTERVENTIONS

- ✘ Media Management
  - ✘ 2,401 meals to quarantined homes
  - ✘ Financial Assistance Requests
  - ✘ Health Monitoring to 64 quarantined individuals
  - ✘ 791 home visits (symptoms, temperatures, patient and contact interviews)
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# COMMUNITY PARTNERS

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- KCHD – CDP/PHP, Health Communications, Environmental Health
- Children's Mercy Hospital
- Missouri Department of Health & Senior Services
- Other Area Local Health Departments
- Church with known exposure
- Vocational School
- Employers
- KC Office of Emergency Management
- United Way 2-1-1 & KCVOAD
- KC Police Department

# LESSONS LEARNED

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- Early identification and notification is the key to effective prophylaxis.
  - MMR used for prophylaxis must be administered within 72 hours of exposure to be effective. IG can be given as late as 6 days post exposure. Neither MMR nor IG is 100% effective in preventing disease, even when given within the appropriate time period.
    - Recommendations for the use of IG have changed since the 2012 Red Book was published. Check the CDC Measles website or MMWR Recommendations and Reports June 14, 2013 / 62(RR04);1-34 “Prevention of Measles, Rubella, Congenital Rubella Syndrome, and Mumps, 2013: Summary Recommendations of the Advisory Committee on Immunization Practices (ACIP)”  
<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr6204a1.htm>
      - The recommended dose of IG administered intramuscularly (IGIM) is 0.5 mL/kg of body weight (maximum dose = 15 mL) and the recommended dose of IG given intravenously (IGIV) is 400 mg/kg. IGIV is recommended for pregnant women and immune compromised patients.
  - Alert medical providers to the presence of measles in the community to encourage rapid reporting.
  - Suspect measles in people returning from parts of the world known to have endemic or epidemic measles.
  - Do collect specimens for testing; both serological and PCR testing is advised.
  - Do NOT wait for the lab results to come back before reporting the case.



# LESSONS LEARNED

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## Information Sharing

- Initial information comes slowly.
- Need to create event in X-Sentinel early on & enter regularly.
- Conference calls vary in useful information.
- Agency protocols differ among LPHAs and across state lines.
- Regional Public Health Public Information protocol works.

# LESSONS LEARNED

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## Disease Investigation

- Limitations on CDC & State Serology capabilities and supplies
- IGM positives showed that not all the right questions were asked initially
- Labs will likely require both blood draws and swabs – do both from the beginning
- Hospitals count on PH guidance on testing.

# LESSONS LEARNED

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- Be proactive in managing quarantines.
  - Visiting the quarantined households daily, including on weekends, to check temperatures and look for rashes emphasized the need for compliance.
  - When possible, recruiting local social service agencies, such as food banks and ministerial alliances to provide assistance with such things as food and other necessities helps with compliance.
  - Working with employers to protect the jobs of those who must miss work also improves compliance.

# LESSONS LEARNED

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- Voluntary Quarantine is more likely than mandatory
  - Compliance comes over time through
    - educating household members,
    - gaining trust, and
    - **proof that you will be there!**
  - Law Enforcement support is limited for Quarantine Operations

# LESSONS LEARNED

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- With the expectation of compliance comes the expectation of family assistance
  - Contact Emergency Management & start working with local human service agencies early on
    - People must be fed (find out about normal food intake)
    - Rent must be paid
    - Utilities must stay on
  - Calculate staffing needs and thresholds for quarantine operations
    - When will PH ask for assistance with food delivery, in-home care, or other services?



# PERSONAL PROTECTIVE EQUIPMENT

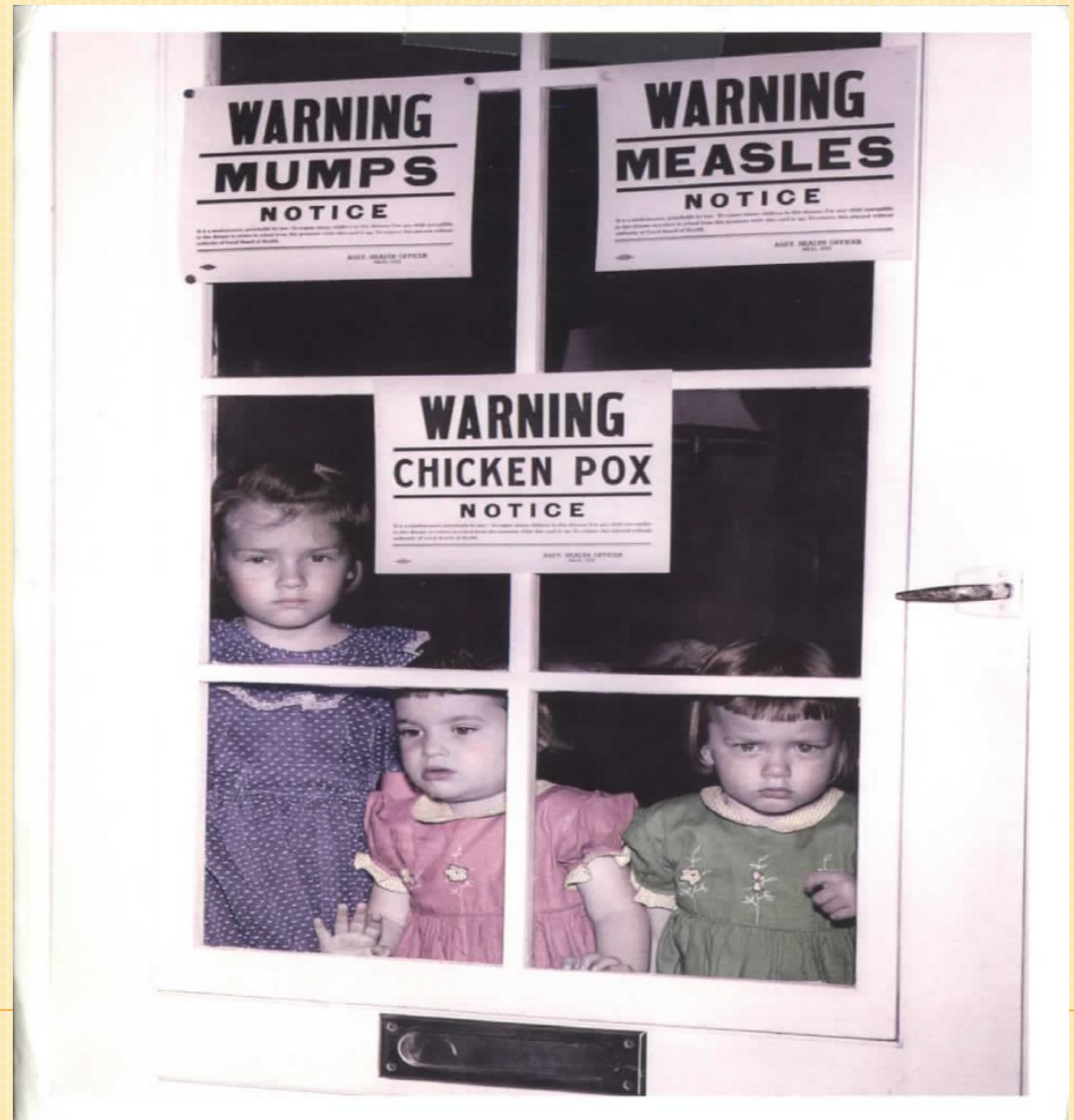
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- Public Health Responders
- Patients and In-Home Care providers (including those quarantined)
- Voluntary Agencies delivering meals and/or services
- Law Enforcement
- Other First Response Agencies

# QUARANTINE

## EBOLA VS. MEASLES

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# THANK YOU - QUESTIONS

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